

CLAIMS:

1. An optical coupling structure to connect an optical fiber and a plane optical waveguide, comprising:

5 a core having same cross-sectional dimensions as a core cross sectional dimensions of the plane optical waveguide at one side connecting to the plane optical waveguide, and having width and depth smaller than a core diameter of the optical fiber at the other side connecting to the optical fiber wherein at least one of width and depth of the core is tapered along optical axis as near to the other side; and,

clad to surround the core.

2. The optical coupling structure according to claim 1 wherein the width of the core is tapered along optical axis as near to the other side.

15 3. The optical coupling structure according to claim 1 wherein a waveguide comprising the core and clad is a single mode optical waveguide and the optical fiber comprises a single mode optical fiber.

20 4. The optical coupling structure according to claim 1 wherein a refractive index difference between the core and the clad is larger than that of the optical fiber.

5. The optical coupling structure according to claim 1 wherein each of the core and clad comprises a silica and the optical fiber

comprises a silica optical fiber.

6. A plane optical circuit to optically connect to optical fiber at a side surface of the plane optical circuit, comprising:

5 a core having a first refractive index, at least one of width and depth of the core being tapered along optical axis in a part near to the side surface, the width and the depth of the core at the side surface being smaller than a core diameter of the optical fiber; and,

10 clad having second refractive index smaller than the first refractive index to surround the core.

7. The plane optical circuit according to claim 6 wherein the width of the core is tapered along optical axis in the part near to the side surface.

15 8. The plane optical circuit according to claim 6 wherein a refractive index difference between the core and the clad is larger than that of the optical fiber.